

The listing of any available replacement part herein in no case constitutes a recommendation, warranty, or guarantee by Howard W. Sams & Company as to the quality and suitability of such replacement part. The numbers of the listed parts have been compiled from information furnished to Howard W. Sams & Company by the manufacturers of the specific type of replacement part listed.

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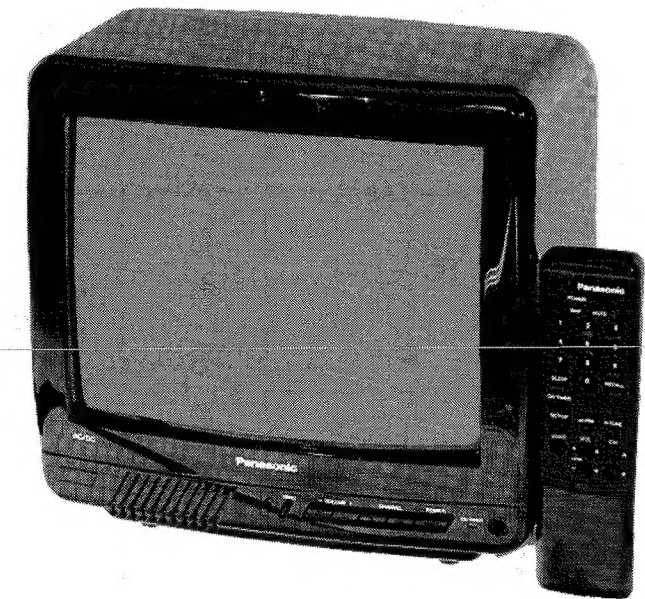
2932

PANASONIC

MODELS CTN-1050R/51R/60R/61R

SET 2932

PANASONIC
Model CTN-1061R (Chassis AMDP215)



Essential coverage
for servicing a television receiver...

- Schematics
- Component locations
- Parts lists

Coverage includes these additional models and chassis:

| MODEL | CHASSIS |
|-----------|---------|
| CTN-1050R | ANDP215 |
| CTN-1051R | APDP215 |
| CTN-1060R | AMDP215 |



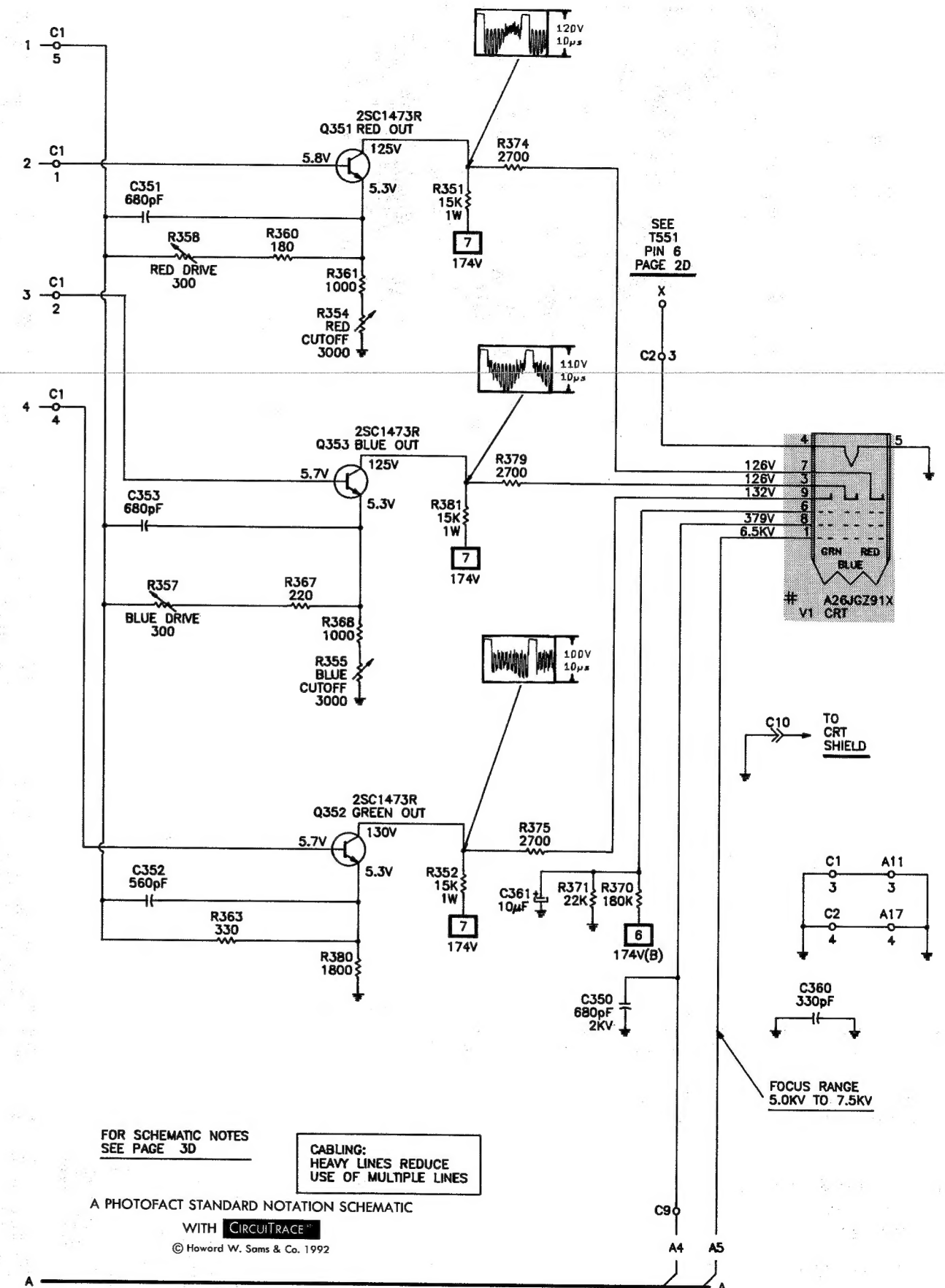
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JANUARY 1992 SET 2932

For Supplier Address,
See PHOTOFACT Annual Index

2932

CRT SCHEMATIC



MODELS CTN-1050R/51R/60R/61R

CAPACITORS

| Item | Rating | Mfr. Part No. |
|--------|----------------------|---------------|
| C022 | 33 5% 50V N150 | ECCF1H330JP |
| C023 | 15 5% 50V N150 | ECCF1H150JP |
| C031 | 30 Trimmer | ECRHA030E41 |
| C103 | 6 ±.25pF 50V NPO | ECCF1H060CC |
| C104 | 2 ±.25pF 50V NPO | ECCF1H020CC |
| C112 | 18 5% 50V NPO | ECCF1H180J |
| C151 | 68 5% 50V NPO | ECCF1H680JC |
| C152 | 15 5% 50V NPO | ECCF1H150JC |
| C155 | 2 ±.25pF 50V NPO | ECCF1H020CC |
| C207 | 68 10% 50V N150 | ECCF1H680KP |
| C350 | 680 10% 2KV | ECKD3D681KB |
| C355 | .001 10% 500V | ECKD2H102KB |
| C503 | 220 5% 50V N750 | ECCF1H221JU |
| # C513 | 10 1% 500V | ECCD2H100F |
| # C514 | 820 10% 500V | ECKD2H821KB |
| # C515 | 820 10% 500V | ECKD2H821KB |
| # C551 | .18 5% 200V | ECQF2H184JS |
| # C554 | 560 10% 500V | ECKD2H561KB |
| # C555 | 560 10% 500V | ECKD2H561KB |
| # C562 | .001 5% 2KV (1) | ECKD3D102JB |
| | .0012 5% 2KV | ECKD3D122JB |
| | .0015 5% 2KV | ECKD3D152JB |
| # C564 | .0047 5% 1.2KV | ECWH12H472JS |
| # C568 | 560 10% 500V | ECKD2H561KB |
| C605 | 8 ±.5pF 50V N750 | ECCF1H080DU |
| C607 | 100 10% 50V NPO | ECKF1H101KB |
| C608 | 100 10% 50V NPO | ECKF1H101KB |
| C609 | 100 10% 50V NPO | ECKF1H101KB |
| # C803 | .0047 +100% -0% 500V | ECKD2H472PU |
| # C804 | .0047 +100% -0% 500V | ECKD2H472PU |
| # C817 | .015 10% 125VAC | ECQU1A153KH |
| # C818 | .015 10% 125VAC | ECQU1A153KH |
| C853 | 330 10% 500V (2) | ECKD2H331KB |
| C863 | 33 5% 50V (2) | ECCF1H330J |
| C864 | .0047 10% 500V (2) | ECKD2H472KB |
| C866 | .01 10% 500V (2) | ECKD2H103KB |

(1) Replace with original value only
(2) Used in Models CTN-1060R, CTN-1061R.
For SAFETY use only equivalent replacement part.

ELECTROLYTIC CAPACITORS

| Item | Rating | Mfr. Part No. |
|--------|----------|---------------|
| C452 | 1.0 25V | ECSF25E1VB |
| # C531 | 33 25V | ECEA1EU330 |
| # C552 | 220 25V | ECEA1EU221 |
| # C553 | 22 250V | ECEA2EU220W |
| # C559 | 220 25V | ECEA1EGE221 |
| # C566 | 220 35V | ECEA1VGE221 |
| # C805 | 220 200V | ECE52DU221E4 |
| # C806 | 10 160V | ECEA2CGE100 |
| # C812 | 33 160V | ECEA160V33Z |

For SAFETY use only equivalent replacement part.

COILS (RF-IF)

| Item No. | Rating | Mfr. Part No. |
|----------|----------------|---------------|
| L006 | 5.6uH | TLUABTASR6K |
| L007 | 5.6uH | TLUABTA5R6K |
| L008 | 5.6uH | TLUABTA5R6K |
| L011 | 1.0uH | TLUABTA1ROK |
| L103 | AFT | TL167394-1 |
| L104 | 1.2uH | TL0012K205C |
| L105 | VCO | TL1158755 |
| L106 | 15uH | TLUABTA150K |
| L108 | 1.2uH | TL0012K205C |
| L201 | Quadrature | TL563318-2 |
| L202 | 4.7uH | TLUABTA4R7K |
| L301 | 3.58MHz Trap | ELB5A082 |
| L354 | 150uH | TLUABTA151K |
| # L801 | Line Choke (1) | ELF18D217 |
| # L801 | Line Choke (2) | ELF18D219 |
| L851 | 5.6uH (2) | TLT056K109R |
| L852 | 5.6uH (2) | TLT056K109R |
| L860 | 150uH (2) | TLT151K991R |

(1) Used in Models CTN-1050R, CTN-1051R.
(2) Used in Models CTN 1060R, CTN-1061R.
For SAFETY use only equivalent replacement part.

CONTROLS

(All wattages 1/2 watt or less, unless otherwise listed.)

| Item No. | Function | Resistance | Mfr. Part No. |
|----------|---------------|------------|---------------|
| R106 | AGC | 5K | EVN60AA00B53 |
| R304 | Sub-Contrast | 2K | EVND4AA00B23 |
| R318 | Sub-Bright | 10K | EVN60AA00B14 |
| R354 | Red Low | 3K | EVN49AA00B33 |
| R355 | Blue Low | 3K | EVN49AA00B33 |
| R357 | Blue High | 300 | EVN49AA00B32 |
| R358 | Red High | 300 | EVN49AA00B32 |
| R453 | Vertical Size | 50K | EVN60AA00B54 |
| R619 | Sub-Tint | 5K | EVN60AA00B53 |
| R855 | B+ Adjust (1) | 500 | EVN60AA00B52 |

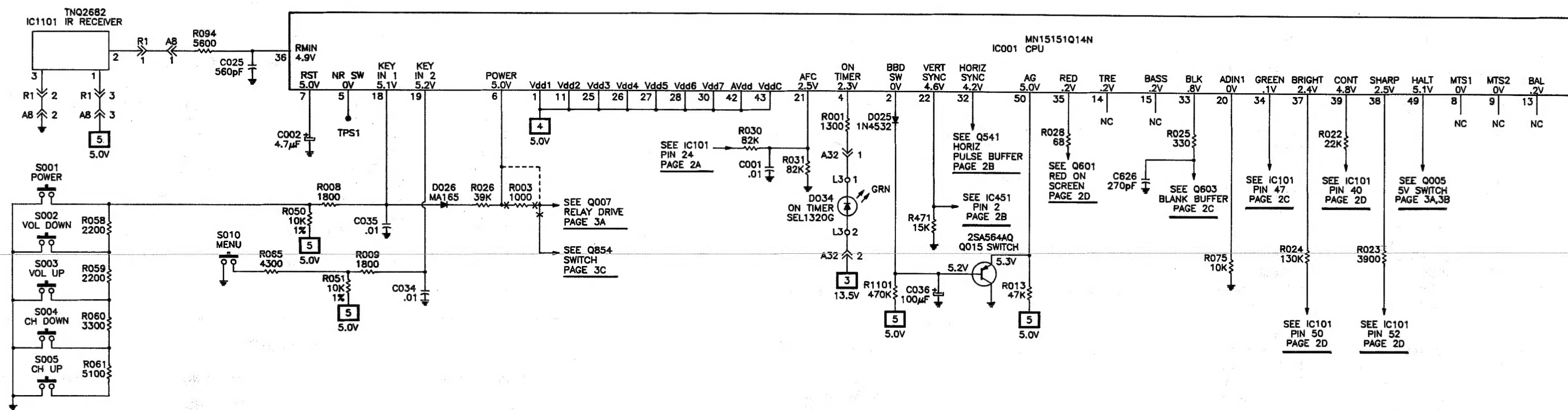
(1) Used in Models CTN-1060R, CTN-1061R

RESISTORS

| Item No. | Rating | Mfr. Part No. | NTE Replacement |
|----------|-----------------------|------------------|-----------------|
| # D806 | 7.2 Cold PTC | ERPF50M080F | - |
| R050 | 10K 1% 1/4W Mtl Flm | ER0S2CKF1002 | - |
| R051 | 10K 1% 1/4W Mtl Flm | ER0S2CKF1002 | - |
| R206 | 22 5% 1W Fusible | ERQ1CJP220 | F1W022 |
| # R509 | 5600 5% 2W Mtl Flm | ERG25J5562 | 2W256 |
| # R510 | 3300 5% 2W Mtl Flm | ERG2ANJ332 | 2W233 |
| # R531 | 47 5% 1/4W Carbon | ERD25FJ470 | QW047 |
| # R532 | 182K 1% 1/4W Mtl Flm | ER0S2CKF1823 | - |
| # R533 | 4640 1% 1/4W Mtl Flm | ER0S2CKF4641 | - |
| # R551 | 1 5% 1/2W Carbon | ERDS1FJ1R0 | HW1D0 |
| # R552 | 1 5% 1/2W Carbon | ERDS1FJ1R0 | HW1D0 |
| # R553 | 1 5% 1/2W Carbon | ERDS1FJ1R0 | HW1D0 |
| # R558 | 2 5% 1W Fusible | ER01CJP2R0 | F1W2D0 |
| # R562 | 1200 5% 1W Mtl Flm | ERG1SJ122 | 1W212 |
| # R569 | 100 5% 1/2W Carbon | ERDS1TJ101 | HW110 |
| # R801 | 5600 10% 3W Wirewound | ERF3AK5R6 | - |
| # R802 | 220 5% 10W Wirewound | ERF10ZJ221 | 10W122 |
| # R804 | 220K 5% 1/4W Carbon | ERDS2TJ224 | QW422 |
| # R805 | 10K 5% 1/2W Carbon | ERDS1TJ103 | HW310 |
| # R807 | 47 5% 1/4W Carbon | ERD25FJ470 | QW047 |
| # R808 | 33 5% 1/4W Carbon | ERD25FJ330 | QW033 |
| # R810 | 18 5% 3W Wirewound | ERF3AJ180 | - |
| # R815 | 2.7M 10% 1/2W Carbon | ERC12ZGK275 | HW527 |
| R851 | 33 5% 3W Carbon | ERG3SJ330 (1) | 3W033 |
| # R854 | 107K 1% 1/4W Mtl Flm | ER0S2CKF1073 (1) | - |
| # R856 | 4870 1% 1/4W Mtl Flm | ER0S2CKF4871 (1) | - |

(1) Used in Models CTN-1060R, CTN-1061R.
For SAFETY use only equivalent replacement part.

SELECTOR/TUNER CONTROL SCHEMATIC



FOR SCHEMATIC NOTES
SEE PAGE 3D

PARTS LIST

Important Parts Information

- The parts listed here are those not usually available from a well-stocked supply cabinet or bin.
- Where items may be replaced with equivalent parts, several alternates are shown from participating vendors.
- On the parts lists, safety items are marked with a # to remind you that only exact replacements are recommended for these items.
- When ordering parts, state the model number, part number, and description.

Obtaining Parts

Many of these parts are available from your local Sams authorized distributor or the manufacturer of the equipment. Call Sams for the name of your nearest distributor:

800-428-7267

Or consult the Sams *Annual Index* for the address of the original equipment manufacturer.

Participating Vendors

Information on test equipment and replacement parts is listed in these pages for the following participating vendors. Consult the Sams *Annual Index* for their current address.

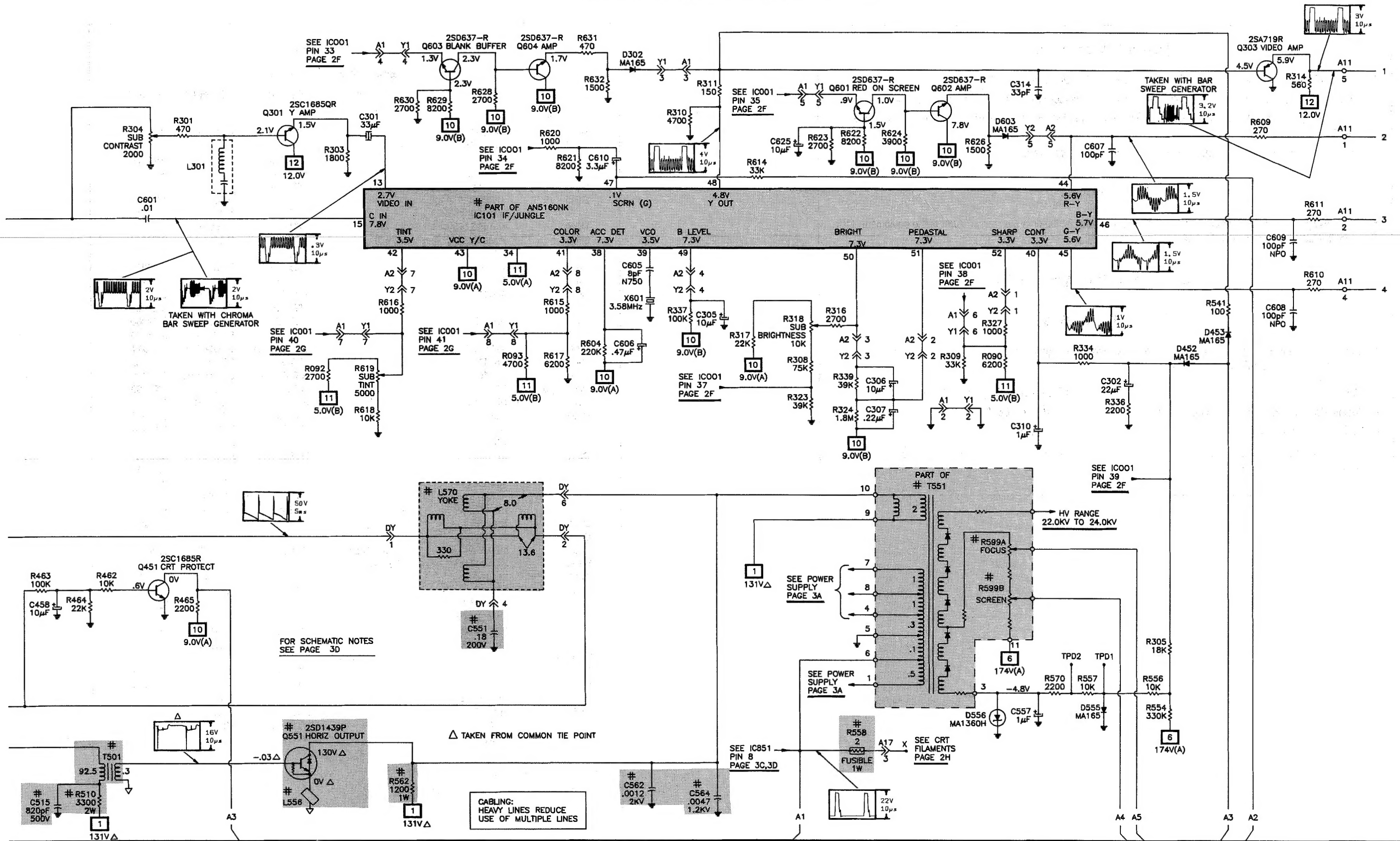
- B&K Precision
 - Custom Components Corporation (Chek-A-Color)
 - EVG / Russell Industries, Inc.
 - NTE Electronics, Inc. (NTE)
 - Philips ECG Company (ECG)
- PTS Electronics Corporation (PTS)
 - Quam-Nichols Co. (Quam)
 - Sencore, Inc.
 - Thomson Consumer Electronics, Inc. (SK, TCE)

SEMICONDUCTORS

(Select replacement for best results.)

| Item No. | Type No. | Mfr. Part No. | NTE Part No. | ECG Part No. | TCE Part No. |
|---------------|----------|---------------|--------------|--------------|--------------|
| D004 | MA165 | - | NTE519 | ECG519 | SK3100 |
| D005 | MA4051L | - | - | - | - |
| D020 | MA165 | - | NTE519 | ECG519 | SK3100 |
| D021 | MA27TA | - | NTE605A | ECG605A | SK7952 |
| D022 | MA165 | - | NTE519 | ECG519 | SK3100 |
| D025 | 1N4532 | - | NTE177 | ECG177 | SK9091 |
| | MA150 | - | NTE177 | ECG177 | SK9091 |
| D026 | MA165 | - | NTE519 | ECG519 | SK3100 |
| D031 | AM01Z | - | NTE116 | ECG116 | SK3313 |
| | ERA1501 | - | NTE552 | ECG552 | SK9000 |
| D032 | 1N4532 | - | NTE177 | ECG177 | SK9091 |
| D034 | SEL1320G | - | NTE3167 | ECG3167 | SK2167 |
| D040 | MA165 | - | NTE519 | ECG519 | SK3100 |
| D302 | MA165 | - | NTE519 | ECG519 | SK3100 |
| D451 | ERA15-01 | - | NTE552 | ECG552 | SK9000 |
| D452, 3 | MA165 | - | NTE519 | ECG519 | SK3100 |
| D456 | MA4120M | - | NTE5021T1 | ECG5021T1 | SK9971 |
| D457 | MA4110 | - | NTE5020A | ECG5020A | SK11A |
| D502 | MA4082 | - | NTE5016A | ECG5016A | SK8A2 |
| D503, 4, 5 | MA165 | - | NTE519 | ECG519 | SK3100 |
| D506 | MA4062 | - | NTE5013A | ECG5013A | SK6A2 |
| # D531 | AS01 | - | NTE552 | ECG552 | SK9000 |
| | AU01 | - | NTE552 | ECG552 | SK9000 |
| | ERA2204 | - | NTE552 | ECG552 | SK9000 |
| D541 | MA4051M | - | NTE5010A | ECG5010A | SK5A1 |
| # D551 | RU2N | - | NTE552 | ECG552 | SK9000 |
| # D552, 3, 4 | AS01 | - | NTE552 | ECG552 | SK9000 |
| | AU01 | - | NTE552 | ECG552 | SK9000 |
| | ERA2204 | - | NTE552 | ECG552 | SK9000 |
| D555 | MA165 | - | NTE519 | ECG519 | SK3100 |
| D556 | MA1360H | - | - | - | - |
| D557 | QB105N | TVSQB105N | NTE135A | ECG135A | SK5V1 |
| D560 | QB109SA | TVSQB109SA | - | - | - |
| D603 | MA165 | - | NTE519 | ECG519 | SK3100 |
| # D801 - D804 | RM11B | - | NTE125 | ECG125 | SK3081 |
| | EM02BM | - | NTE125 | ECG125 | SK3081 |
| | EM02BMV | - | NTE125 | ECG125 | SK3081 |
| | ERC13-08 | - | NTE125 | ECG125 | SK3081 |
| | ERC12-08 | - | NTE125 | ECG125 | SK3081 |
| # D806 (1) | - | ERPF5B0M080F | - | - | - |
| D851 | EU2A | TVSEU2A | NTE552 | ECG552 | SK9000 |
| D852 | RGP10J | - | NTE552 | ECG552 | SK9000 |
| # D853 | RD6.2EB1 | TVSRD6.2EB1 | NTE5012A | ECG5012A | SK6A0 |
| D855, 6 | MA165 | - | NTE519 | ECG519 | SK3100 |
| D857 | RGP10J | - | NTE552 | ECG552 | SK9000 |
| D858 | AS01 | - | NTE552 | ECG552 | SK9000 |

(1) Used in some versions.
For SAFETY use only equivalent replacement part.



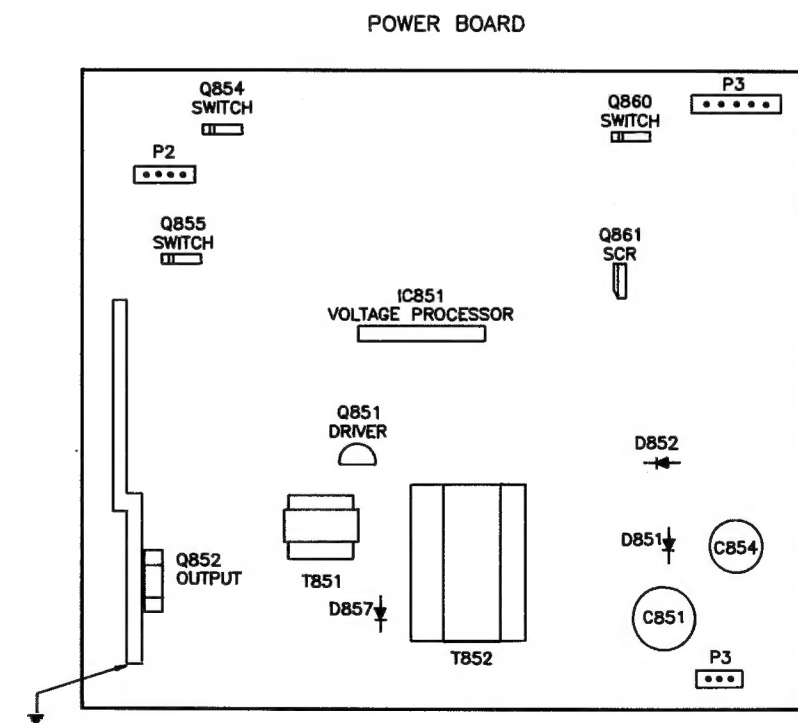
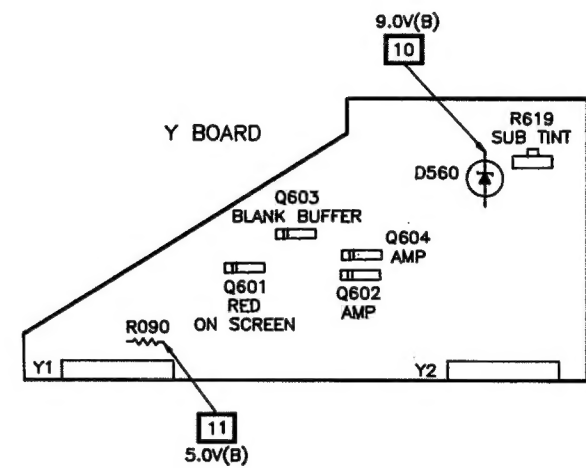
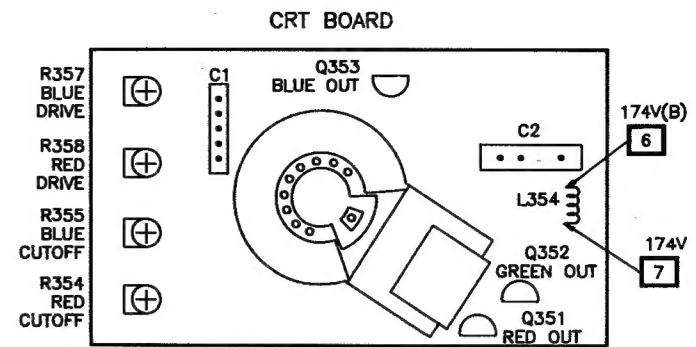
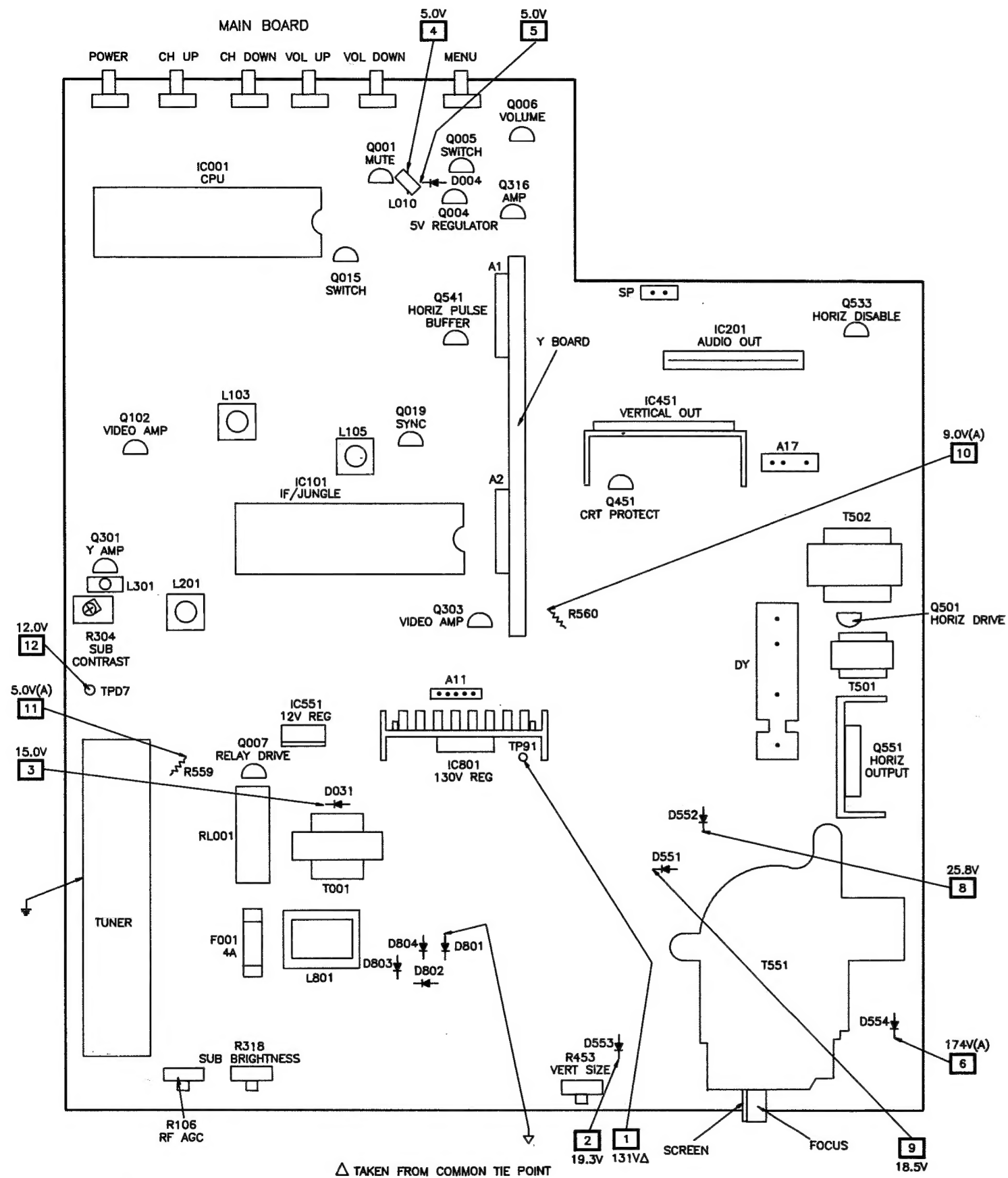
PARTS LIST continued

| SEMICONDUCTORS continued | | | | | |
|--|-------------|---------------|--------------|--------------|--------------|
| (Select replacement for best results.) | | | | | |
| Item No. | Type No. | Mfr. Part No. | NTE Part No. | ECG Part No. | TCE Part No. |
| D860 | MA4062M | - | NTE5013A | ECG5013A | SK6A2 |
| D861 | AS01 | - | NTE552 | ECG552 | SK9000 |
| | AU01 | - | NTE552 | ECG552 | SK9000 |
| | ERA2206 | - | - | - | - |
| | RGP10J | - | NTE552 | ECG552 | SK9000 |
| D862 | MA4062L | - | NTE5012A | ECG5012A | SK6A0 |
| D863 | MA165 | - | NTE519 | ECG519 | SK3100 |
| D864 | ERA22-04 | - | NTE116 | ECG116 | SK3312 |
| | ERA22-04V3 | - | NTE116 | ECG116 | SK3312 |
| | AS01 | - | NTE552 | ECG552 | SK9000 |
| | AU01 | - | NTE552 | ECG552 | SK9000 |
| D865, 7 | MA165 | - | NTE519 | ECG519 | SK3100 |
| D868, 9 | AS01 | - | NTE552 | ECG552 | SK9000 |
| | AU01 | - | NTE552 | ECG552 | SK9000 |
| | ERA2204 | - | NTE552 | ECG552 | SK9000 |
| IC001 | MN15151Q14N | - | - | - | - |
| | MN15151Q14R | - | - | - | - |
| # IC101 | AN5160NK | - | - | - | - |
| | AN5160NK-N | - | - | - | - |
| IC201 | AN5265 | - | NTE1789 | ECG1789 | SK9876 |
| IC451 | LA7835 | - | NTE1855 | ECG1855 | SK10085 |
| | LA7835-TV | - | NTE1855 | ECG1855 | SK10085 |
| # IC551 | AN78M12 | - | NTE966 | ECG966 | SK3592 |
| | AN78M12LB | - | NTE966 | ECG966 | SK3592 |
| # IC801 | STR30130 | TVSSSTR30130 | NTE1777 | ECG1777 | SK9870 |
| IC851 | AN5900 | - | - | - | - |
| Q001, 4 | 2SC1685R | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685QR | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685TAQR | - | NTE85 | ECG85 | SK9229 |
| Q005 | 2SA564AQ | - | NTE290A | ECG290A | SK3932 |
| | 2SA564AQR | - | NTE290A | ECG290A | SK3932 |
| | 2SA564ATAQR | - | NTE290A | ECG290A | SK3932 |
| Q006, 7 | 2SC1685R | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685QR | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685TAQR | - | NTE85 | ECG85 | SK9229 |
| Q015 | 2SA564AQ | - | NTE290A | ECG290A | SK3932 |
| | 2SA564AQR | - | NTE290A | ECG290A | SK3932 |
| | 2SA564ATAQR | - | NTE290A | ECG290A | SK3932 |
| Q019 | 2SC1685R | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685QR | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685TAQR | - | NTE85 | ECG85 | SK9229 |
| Q102 | 2SC1685R | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685QR | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685TAQR | - | NTE85 | ECG85 | SK9229 |
| Q301 | 2SC1685QR | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685TAQR | - | NTE85 | ECG85 | SK9229 |
| Q303 | 2SA719R | - | NTE290A | ECG290A | SK3114A |
| | 2SA719QR | - | NTE290A | ECG290A | SK3114A |
| # For SAFETY use only equivalent replacement part. | | | | | |

| SEMICONDUCTORS continued | | | | | |
|--|-------------|---------------|--------------|--------------|--------------|
| (Select replacement for best results.) | | | | | |
| Item No. | Type No. | Mfr. Part No. | NTE Part No. | ECG Part No. | TCE Part No. |
| | 2SA719TAQR | - | NTE290A | ECG290A | SK3114A |
| Q316 | 2SC1685R | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685QR | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685TAQR | - | NTE85 | ECG85 | SK9229 |
| Q351 - Q353 | 2SC1473R | - | NTE399 | ECG399 | SK9352 |
| | 2SC1473NC | - | NTE399 | ECG399 | SK9352 |
| | 2SC1473AQH | - | NTE399 | ECG399 | SK9352 |
| Q451 | 2SC1685R | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685QR | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685TAQR | - | NTE85 | ECG85 | SK9229 |
| # Q501 | 2SC1573A | - | NTE399 | ECG399 | SK9352 |
| | 2SC1573AH | - | NTE399 | ECG399 | SK9352 |
| # Q533 | 2SC1685R | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685QR | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685TAQR | - | NTE85 | ECG85 | SK9229 |
| Q541 | 2SC1685R | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685QR | - | NTE85 | ECG85 | SK9229 |
| | 2SC1685TAQR | - | NTE85 | ECG85 | SK9229 |
| # Q551 | 2SD1439P | - | NTE2302 | ECG2302 | SK9422 |
| | 2SD1439PLB | - | NTE2302 | ECG2302 | SK9422 |
| Q601 - Q604 | 2SD637-R | - | NTE16 | ECG16 | SK9664 |
| | 2SD637QR | - | NTE16 | ECG16 | SK9664 |
| | 2SC1685QR | - | NTE85 | ECG85 | SK9229 |
| Q851 | 2SC1383R | - | NTE293 | ECG293 | SK3849 |
| | 2SC1383NC | - | NTE293 | ECG293 | SK3849 |
| Q852 | 2SC3300 | - | NTE2304 | ECG2304 | SK9985 |
| | 2SC3300ALF | - | NTE2304 | ECG2304 | SK9985 |
| Q854 | 2SD637-R | - | NTE16 | ECG16 | SK9664 |
| | 2SD637PQR | - | NTE16 | ECG16 | SK9664 |
| Q855 | 2SB642-R | - | NTE19 | ECG19 | SK3912 |
| | 2SB642QR | - | NTE19 | ECG19 | SK3912 |
| Q860 | 2SB641-Q | - | NTE19 | ECG19 | SK9667 |
| | 2SB641QR | - | NTE19 | ECG19 | SK9667 |
| Q861 | 2P5M | TVS2P5M | NTE5458 | ECG5458 | SK9861 |
| # For SAFETY use only equivalent replacement part. | | | | | |

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PLACEMENT CHART



TEST EQUIPMENT

Test equipment listed by participating manufacturers illustrates typical or equivalent equipment used by Sams engineers to obtain measurements. This equipment is compatible with most types used by field service technicians.

| Equipment | B&K Precision No. | Sencore No. |
|-------------------------|---|---------------------------|
| Oscilloscope | 1541A, 2120, 2125, 2160, 2190, 2522 | SC61 |
| Generators | | |
| RGB | 1249A, 1260 | RG67 |
| Multiburst Signal | 1251, 1260 | VA62A |
| Color Bar | 1211A, 1249A, 1251, 1260 | VA62A, CG25, NT64 |
| TV Stereo | 2009 | ST65, ST66 |
| Analog VOM | 114, 117, 177, 214 | - |
| Digital VOM | 377, 388HD, 2700 Series, 2831A, 2860, 2900 Series | DVM37, DVM56A, SC61 |
| Frequency Meter | 1803A, 1804A, 1805, 1822, 1851, 1855 | FC71, SC61 |
| Hi-Voltage Probe | HV-44 | HP200 |
| VOM/DMM | - | TP212 |
| Accessory Probes | PR-28(HV) | - |
| Isolation Transformer | TR110, 1604, 1653, 1655 | PR57 |
| Capacitance Analyzer | 810A, 815, 820, 830 | LC76, LC101, LC102 |
| CRT Analyzer | 480, 490 | CR70 |
| Temperature Probe | TP-28, TP-30 | - |
| AC Leakage Tester | 1655 | PR57 |
| Logic Probe | DP21, DP51 | - |
| Logic Pulser | DP31, DP101 | - |
| Inductance Analyzer | 875A | LC76, LC101, LC102 |
| Flyback Yoke Tester | 875A | VA62A, LC76, LC101, LC102 |
| TV Stereo Power Monitor | - | SR68 |
| Field Strength Meter | - | FS73, FS74 |
| Transistor Tester | 510, 520B, 530 | TF46 |
| Video Analyzer | - | VA62A |
| Modulator/Converter | 1201 | |

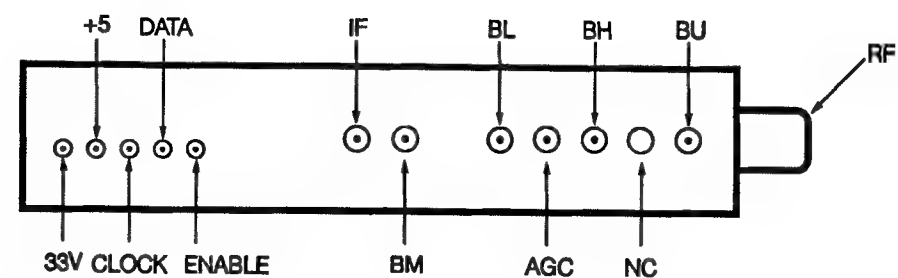
TUNER INFORMATION

TUNER VOLTAGE CHART

| | VHF Low Band | VHF High Band | UHF Band |
|------|--------------|---------------|----------|
| 33V | 3.5V | 6.6V | 7.4V |
| 5.0V | 5.0V | 5.0V | 5.0V |
| CLK | .1V | .1V | .1V |
| DATA | .1V | .2V | .1V |
| ENA | .6V | .6V | .6V |
| IF | 0V | 0V | 0V |
| BM | 12.0V | 12.0V | 12.0V |
| BL | 12.0V | 4.0V | .1V |
| AGC | 7.8V | 7.8V | 8.7V |
| BH | 0V | 11.8V | 0V |
| NC | 1.0V | 4.0V | 5.0V |
| BU | .1V | .1V | 12.0V |

Note: VHF Low Band voltages taken on channel 2.
VHF High Band voltages taken on channel 7.
UHF Band voltages taken on channel 14.

TUNER TERMINAL GUIDE

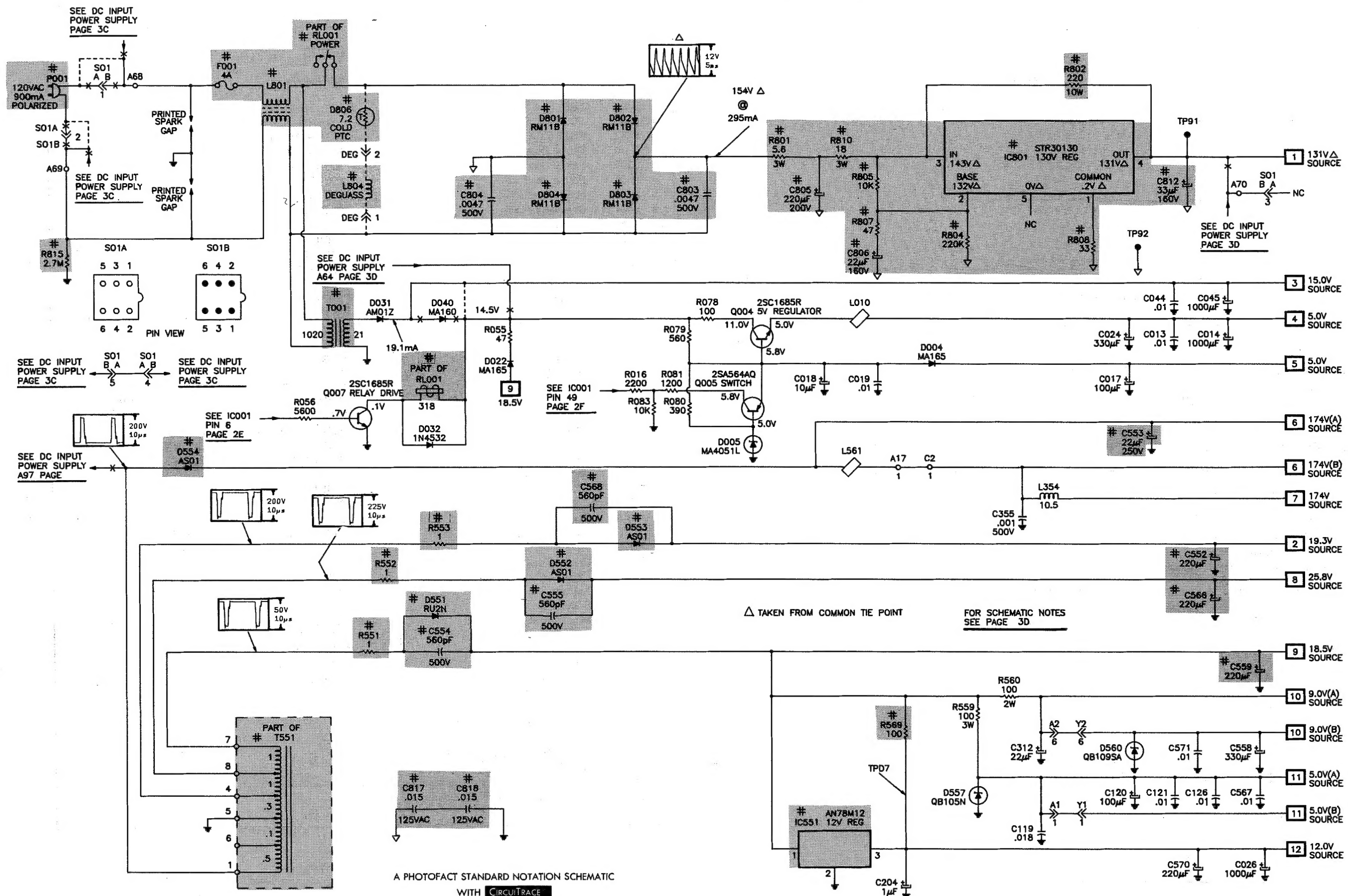


PANASONIC

MODELS CTN-1050R/51R/60R/61R

| CABINET PARTS | |
|--------------------------------------|-------------|
| MODEL CTN-1050R | |
| Item | Part No. |
| Cabinet front Assembly | TXFKY890SER |
| Cabinet Rear | TKU2A24701 |
| 6 Button Assembly | TXFBX021SER |
| Channel, Power, Volume, Menu/Control | |
| MODEL CTN-1051R | |
| Item | Part No. |
| Cabinet Front Assembly | TXFKY900SER |
| Cabinet Rear | TKU2A24702 |
| 6 Button Assembly | TXFBX031SER |
| Channel, Power, Volume, Menu/Control | |
| MODEL CTN-1060R | |
| Item | Part No. |
| Cabinet Front Assembly | TXFKY231SER |
| Cabinet Rear | TXFKU091SER |
| 6 Button Assembly | TXFBX021SER |
| Channel, Power, Volume, Menu/Control | |
| MODEL CTN-1061R | |
| Item | Part No. |
| Cabinet Front Assembly | TXFKY221SER |
| Cabinet Rear | TXFKU101SER |
| 6 Button Assembly | TXFBX031SER |
| Channel, Power, Volume, Menu/Control | |
| REMOTE CONTROL TRANSMITTERS | |
| Item | Part No. |
| Battery Cover, EUR641033 | UR64EC978 |
| Battery Cover, EUR641231 | UR64EC978A |

AC INPUT POWER SUPPLY SCHEMATIC



PARTS LIST continued

SPEAKER

| Item No. | Description | Mfr. Part No. | Quam Part No. |
|----------|----------------------|-----------------------------|---------------|
| SP1 | 1 1/2"X2 3/4" 16 Ohm | EAS7D11KC-G 7D11KC-G (1) | - |

(1) Number on unit.

COILS & TRANSFORMERS

| Item No. | Function | Mfr. Part No. | On-Unit No. | Russell Part No. |
|----------|--|---------------|-------------|------------------|
| # L570 | Yoke 90° Horiz. 4.85mH Vert. 22.2mH | OLY15306FA | OLY15306F | - |
| # T001 | Power | TLP16297 | - | - |
| # T501 | Horizontal Driver | TLH15412 | - | - |
| # T502 | Horizontal Coupler | ETE19Z30AY | E1930 | - |
| # T551 | Horizontal Output (1) | OLF04701F | - | FBT-217 |
| T851 | Converter, Drive (2) | TLP15903 | - | - |
| # T852 | DC Power (2) | ETS39K70A | - | - |

(1) R599A Focus, R599B Screen Controls are part of T551.
(2) Used in Models CTN-1060R, CTN-1061R.
For SAFETY use only equivalent replacement part.



Created with pride by the
employees of Howard W. Sams
& Company.

J. Barker, B. Buchanan,
T. Clensy, R. Raus, S. Scott,
B. Smith, K. Smith, D. Stitt,
D. Urick

MISCELLANEOUS

| Item No. | Description | Mfr. Part No. | Notes |
|----------|---|--|--|
| D034 | LED | SEL1320G | ON Timer |
| # F001 | FUSE 4.0Amp, 125V | XBA1C40NU100 | |
| # F852 | FUSE 7.0Amp, 125V (1) | XBA1F70NU100 | |
| L010 | Ferrite Bead | EXCELSA24 | |
| L109 | Ferrite Bead | EXCELSA35 | |
| # L556 | Ferrite Bead | EXCELSA24 | |
| L561 | Ferrite Bead | EXCELSA24 | |
| # L804 | Degaussing Coil | OLK19030M | |
| L853 | Ferrite Bead (1) | TSC909 | |
| L854 | Ferrite Bead (1) | TSC909 | |
| L855 | Ferrite Bead (1) | TSC909 | |
| L856 | Ferrite Bead (1) | TSC909 | |
| L857 | Ferrite Bead (1) | TSC909 | |
| L858 | Ferrite Bead (1) | TSC909 | |
| # P001 | Cord CTN-1050R Cord CTN1051R Cord CTN1060R Cord CTN1061R | OSX110903 OSX110904 OSX111003 OSX111004 | AC, White AC, Black AC, White AC, Black |
| # P2 | Cord (1) | TXASX0111AQM | CAR BATTERY |
| S001 | Switch | EVQQBH12T | POWER |
| S002 | Switch | EVQQBH12T | VOLUME DOWN |
| S003 | Switch | EVQQBH12T | VOLUME UP |
| S004 | Switch | EVQQBH12T | CHANNEL DOWN |
| S005 | Switch | EVQQBH12T | CHANNEL UP |
| S010 | Switch | EVQQBH12T | MENU |
| # SO1B | Socket, Power (1) | TYP SOCK1AP | |
| # V1 | CRT | A26JGZ91X | 10" |
| X001 | Crystal Oscillator | TSS2077MX | |
| X101 | Saw Filter | EFCH45MVK12N | |
| X102 | Trap | EFCS4RSMW3BA | 4.5MHZ |
| X201 | Filter | EFCS4R5MS4 | 4.5MHZ Bandpass |
| X501 | Crystal Oscillator | EFOA503KS41 | |
| X601 | Crystal Oscillator | TSS816MX | 3.58MHZ |
| | Antenna | OSA100004 | UHF/VHF |
| | Fuse Holder | TJC6320 | |
| | Magnet Assembly | TLC2042 | Purity/Convergence |
| | Socket | TJS1A5050 | CRT |
| | Tuner (2) (5) | ENV568C4G3 | UHF/VHF |
| | Tuner (1) (5) | ENV568C5G3 | UHF/VHF |
| | Transmitter (4) | EUR641033 | Remote Control |
| | Transmitter (3) | EUR641231 | Remote Control |

(1) Used in Models CTN 1060R, CTN-1061R.
(2) Used in Models CTN-1050R, CTN-1051R.
(3) Used in Models CTN-1050R, CTN-1060R.
(4) Used in Models CTN-1051R, CTN-1061R.
(5) Contact PTS Electronics Corporation for replacement; order by manufacturer's part number.
For SAFETY use only equivalent replacement part.

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SAFETY PRECAUTIONS

SERVICE WARNING

ONLY qualified service technicians who are familiar with safety checks and guidelines should perform service work. For continued SAFETY:

- 1. Before replacing parts, disconnect power source to protect electrostatically sensitive parts.
- 2. Do not attempt to modify any circuit unless so recommended by the manufacturer.
- 3. When servicing chassis, use an isolation transformer between the line cord and power receptacle.

SERVICING HIGH VOLTAGE AND PICTURE TUBE

Use EXTREME CAUTION when servicing the High Voltage circuits.

- 1. To discharge static High Voltage, connect a 10-kilohm resistor in series with a test lead between chassis and picture tube anode lead.
- 2. DO NOT lift picture tube by the neck.
- 3. ALWAYS wear shatterproof goggles when handling picture tube to protect eyes in case of implosion.

X-RAY RADIATION AND HIGH VOLTAGE LIMITS

Be aware of the instructions and procedures covering x-ray radiation. In solid-state receivers and monitors, the picture tube is the only potential source of x-rays.

- 1. Keep an accurate High Voltage meter available at all times. Check meter calibration periodically.
- 2. Whenever servicing a chassis, check High Voltage at various brightness levels to be sure it is regulating properly.
- 3. Keep High Voltage at rated value, NO HIGHER. Excessive High Voltage may cause x-ray radiation or failure of associated components. DO NOT depend on protection circuits to keep voltage at rated value.
- 4. When troubleshooting a set with excessive High Voltage, avoid close contact with picture tube. DO NOT operate set longer than necessary. To locate the cause of excessive High Voltage, use a variable AC transformer to regulate voltage.
- 5. In present chassis, many electrical and mechanical components have safety-related characteristics which are not detectable by visual inspection. Such components are identified by a # on both the schematic and the parts list. For SAFETY, use only equivalent replacement parts when replacing these components.

SAFETY CHECKS – FIRE AND SHOCK HAZARD

Cold Leakage Checks for Sets with Isolated Ground

- 1. Unplug the AC cord, connect a jumper across the plug prongs, and turn the power switch ON.
- 2. Use an ohmmeter to measure the resistance between the jumpered AC plug and any exposed metal cabinet parts such as antenna screw heads, control shafts, or handle brackets. Exposed metal parts with a return path should measure between 200 kilohms and 5 megohms. Parts without a return path must register infinity.

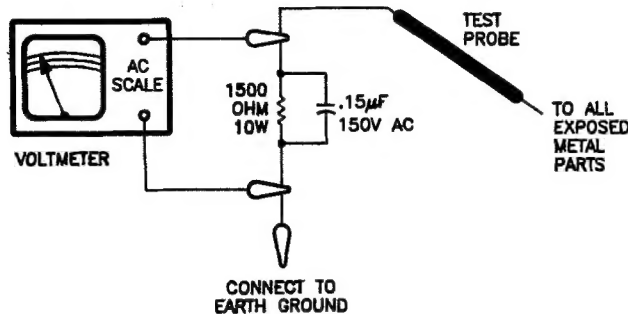
Hot Leakage Current Check

- 1. Plug the AC cord directly into AC outlet. DO NOT use an isolation transformer.
- 2. Use a 1500-ohm, 10-watt resistor in parallel with a .15-microfarad 150-volt AC capacitor to connect between any exposed metal parts on the set and a good earth ground. (See figure below.)
- 3. Use an AC voltmeter with at least 1000 ohms-per-volt sensitivity to measure the voltage across the resistor. Check all exposed metal parts and measure voltage at each point.
- 4. Voltage readings should not exceed .75 volts RMS (5 milliamperes AC). Any value exceeding this limit constitutes a potential shock hazard and must be corrected.
- 5. If AC plug is not polarized, reverse the AC plug and repeat exposed metal part voltage measurement at each point.

GENERAL GUIDELINES

Perform a final SAFETY CHECK before returning set to customer.

- 1. Check repaired area for poorly soldered or de-soldered connections, and check entire circuit board for solder splashes.
- 2. Check inner board wiring for pinched wires or wires contacting any high-wattage resistors.
- 3. Check that all control knobs, shields, covers, grounds and mounting hardware have been replaced. Be sure to replace all insulators and restore proper lead dress.



NEW CIRCUITS

CRT PROTECTION CIRCUIT

This circuit blanks the CRT in the event of vertical sweep loss and also functions as a CRT spot killer when the Receiver is turned Off. During normal operation the Vertical Sweep waveform from Vertical Output IC (IC451) supplies a positive voltage to the base of CRT Protect Transistor (Q451). The conduction of Q451 grounds the anode of D453 and the diode does not conduct, allowing normal video. Any failure mode causing loss of the Vertical Sweep waveform will allow C454 to discharge. Q451 will stop conducting as a result of the reduced Base voltage. This allows D453 to conduct and supply roughly 9.0VDC to the video path going to the CRT. The increased DC voltage drives the video information into the black area and blanks the CRT.

When the Receiver is turned Off, the Vertical Sweep waveform disappears but the 9.0VDC decays slowly. Thus the circuit operates to blank the CRT to provide spot burn protection.

Note that any failure mode causing transistor Q451 to be nonconductive will result in CRT blanking. The easiest way to confirm that the blanking circuit is active, causing a no raster symptom, is to measure the collector voltage of Q451. If the voltage is approximately 9.0VDC, D453 is conducting to cause CRT blanking.

HORIZONTAL DISABLE CIRCUIT

This circuit protects against excessive High Voltage. If for any reason High Voltage exceeds a predetermined level, the circuit operates to shift Horizontal frequency and limit High Voltage. Horizontal pulses from pin 6 of Horizontal Output Transformer (T551) are rectified by diode D531. This DC voltage, directly proportional to the High Voltage variations, is filtered and applied to the Base of Horizontal Disable Transistor Q533, thru precision divider network, R532 and R533. If High Voltage increases, the Horizontal pulse amplitude at pin 6 of T551 increases causing the positive voltage at the cathode of D531 to increase until Q533 starts to conduct. Q533 acts as a resistance in parallel with the Horizontal AFC Filter circuit R502, C506, C507. The conduction of Q533 lowers its resistance and dampens the AFC circuit, causing an increase in the Horizontal Oscillator frequency and reducing the High Voltage.

If the Horizontal is off frequency, determine if the cause is the Horizontal circuit or the Horizontal Disable circuit. If the Disable circuit does not operate during the Horizontal Disable Test, the defect must be corrected to insure that the High Voltage operates within safe limits.

Horizontal Disable Circuit Test

Apply power and set all controls for normal operation. Connect a 33K Ohm resistor from Q533 Base to TPD7 (12.0VDC). Horizontal frequency should increase causing receiver to lose Horizontal sync. Voltage at TP91 should measure between 153V and 162V. If receiver fails to lose Horizontal Sync during test, defect must be corrected. Check Q533, R531, R532, C531, D531, and the amplitude of the waveform at T551 pin 6.

Courtesy of Manufacturer